User Manual

HD2SD

HD-SDI to SD-SDI Downconverter

HD12DAC **and** SD12DAC

Digital to Analog Converters

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Introduction

Congratulations on your selection of a **PANORAMAdtv** product. We are confident it represents the best performance and value available, and we guarantee your satisfaction with it.

If you have questions or comments you may contact us at:

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Contents

Introduction 2
HD2SD Description, Features , and Applications 3
HD2SD Specifications 4
HD2SD Front and Rear Panel Features 4
HD2SD Option Settings - DIP Switch Module 1 and 2 6
HD12DAC and SD12DAC Description, Features and Applications 9
HD12DAC and SD12DAC Specifications 10
HD12DAC and SD12DAC Front and Rear Panel Features 10
HD12DAC Option Settings - DIP Switch Module 1 and 2 12
SD12DAC Option Settings - DIP Switch Module 1 and 2 13

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HD2SD

HD-SDI to SD-SDI Down-Converter and Video/Audio Test Signal Generator

HD2SD Description

The PANORAMAdtv **HD2SD** down-converter is a compact, convenient, and cost effective solution for converting HD-SDI to SD-SDI and analog video in the modern SD and HD broadcast studio environment.

The **HD2SD** accepts HD-SDI (SMPTE 292M/274M/296M) signals for conversion to SD-SDI (SMPTE 259M) video. The down-converted SD-SDI signal is also converted to the selected analog output type (Component, RGB, or Composite/S-Video). HD to SD down-conversion is 10-bit with over sampling of 16x for SD-SDI signals. HD-SDI input format is detected automatically and the various video output options are selectable by setting two external 10-position DIP switches.

Eight channels of audio is passed as 20-bit or 24-bit. A range of additional features is available, including 4:3, 16:9, or 14:9 safe action graticule, SD pedestal, vertical blanking, and anamorphic or letterbox output. Two LEDs on the units rear panel indicate power and HD-SDI signal lock status. The unit also functions as a video and audio test signal generator providing a wide range of useful video test patterns and embedded audio test tones.

Size of the unit is relatively small with dimensions of 4” x 3.4” x 1”. Power may be provided by an optional external 12V power supply with locking connector.

HD2SD Features

- Down-converts HD-SDI to SD-SDI
- Outputs RGB, component, or composite/S-video analog video
- Eight channel audio pass-through at 20-bit or 24-bit
- 16x over-sampling for SD-SDI
- Full 10-bit data path and multi-point interpolation
- Video test pattern generator
- Safe action, title graticule, and SD pedestal
- Anamorphic or letterbox output
- Vertical blanking enable/disable
- 12VDC power supply with locking connector
- SDI signal lock and power LEDs

HD2SD Applications

The **HD2SD is** ideally suited for use in VTR bays, mobile production vehicles, teleconferencing installations, multimedia systems, satellite link and cable TV facilities, on-air radio studios, or any modern SD/HD studio environment. Designed and manufactured in the U.S., it is backed by a strong warranty and a satisfaction guaranteed return policy.

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General Specifications

Input Signal:	HD-SDI
Input Connector:	x1 female BNC, 75 Ohms
Output Signal (digital):	SD-SDI
Output Connector (Digital):	x1 female BNC, 75 Ohms
Output Signal (Analog):	Component, RGB, or Composite/S-Video
Output Connector (Analog):	x3 female BNC, 75 Ohms
Video DAC:	10-bit
SD-SDI Over-Sampling:	16x
Audio Pass-Through:	20-bit or 24-bit
Selectable Parameters (x2 10-Position DIP Switch Modules):	EDH, 4:3/16:9/14:9 safe action/title graticule, SD pedestal, audio resolution: 20/24-bit, anti-alias, SD out format: 625i50/525i59.94, anamorphic/letterbox output, raster/graticule output aspect ratio, 31 video test patterns, and audio test tones.
Power:	12 VDC external power supply (optional)
Dimensions:	4 x 3.4 x 1" (111 x 101 x 27mm)

Supported Video Formats

HD:	SMPTE 292M/274M/296M @ 1.485 and 1.435 Gb/s -1080i @ 60/59.94/50 Hz -1080p/psf @ 30/29.97/25/24/23.98 Hz -720p @ 60/59.94/50/30/29.97/25/24/23.98 Hz
SD:	SMPTE 259M @ 270 Mb/s -625i/50, -525i59.94

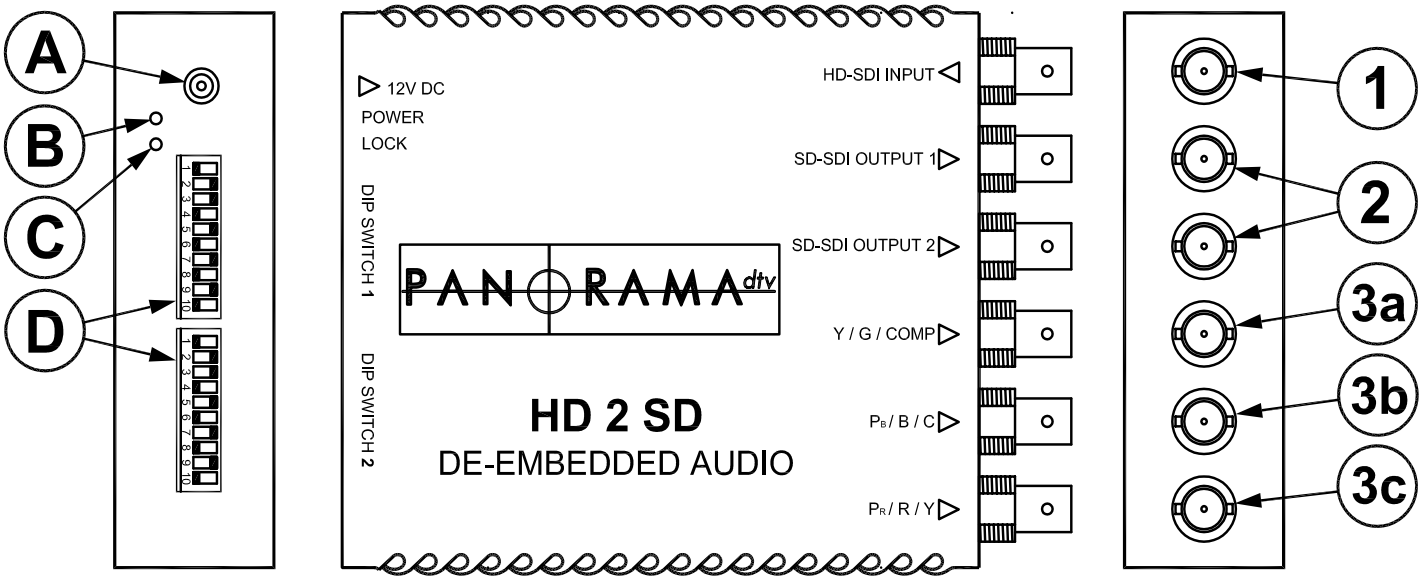
Video and Audio Tests

Video Test Patterns: 100% color bars, 75% color bars, 100% color bars and red, check-field matrix, 4:3 square, 16:9 square, 5 step staircase, valid 5 step modulated staircase, limit ramp, shallow ramp, multiburst 60% sweep with markers, full fieldline 17 ITS, convergence, tartan bars, 1 field in 8 white, white, black, red, green, blue, magenta, cyan, static x frequency sweep lo zoneplate, static x frequency sweep hi zoneplate, static y frequency sweep zoneplate, moving x bars zoneplate, moving y bars zoneplate, moving xy bars zoneplate, static circular zoneplate, & moving circular zoneplate.

Audio Test Tones: (1 kHz on Pair-1/Group-1) (1kHz on P1, 500Hz on P2, 1kHz broken on P3, 500Hz broken on P4) (1kHz on left, 1 kHz broken on left for pairs 1/2/3/4)

HD2SD Front/Rear Panel Features

Please refer to the diagram below to familiarize yourself with the front and rear panel features of the **HD2SD** unit. The sections on the following pages describe these features and are referenced, by number for front panel and letter for rear panel, to the diagram below.



HD2SD Front Panel Features

1 HD/SD-SDI Input

This connector accepts high-definition **HD-SDI** signals to be down-converted to **SD-SDI** signals.

2 SD-SDI Outputs **(1 and 2)**

Each of these two unbalanced BNC connectors output **SD-SDI video** signals down-converted from the **HD-SDI** signal entering the unit at the input (**Item 1**). Each connector outputs the same signal. Note that when the unit is set to output audio test tones, the audio signals are embedded and output from these connectors.

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HD2SD Front Panel Features

3 Analog Output Connectors (PR/R/Y, PB/B/C, and Y/G/COMP)

The converted analog video signals are output from these three connectors. The analog output type is selected by setting **Option DIP Switch 1** (**Item D**). Selecting **component** outputs **PR/PB/Y** signals from the three connectors, selecting **RGB** outputs **Red/Green/Blue** signals, and selecting **Composite/S-Video** outputs **Y/C** signals (**S-Video**) from two connectors (**Items 3a** and **3b**) and a **Composite** signal from the third connector (**Item 3c**). See **3a**, **3b**, and **3c** below.

3a Y/G/COMP Output

- **Component** = outputs **Y** (Luminance) signal
- **RGB** = outputs **GREEN** (**G**) signal
- **Composite** = outputs **Composite** signal (not available from **HD-SDI** source*)

3b PB/B/C Output

- **Component** = outputs **PB** (BLUE color difference) signal
- **RGB** = outputs **BLUE** (**B**) signal
- **S-Video** = outputs **C** (Color) signal (not available from **HD-SDI** source*)

3c PR/R/Y Output

- **Component** = outputs **PR** (RED color difference) signal
- **RGB** = outputs **RED** (**R**) signal
- **S-Video** = outputs **Y** (Luminance) signal (not available from **HD-SDI** source*)

HD2SD Rear Panel Features

A Power Supply Connector

A 12V DC power supply is connected here to provide power to the unit.

B Power Indication LED

This LED lights up GREEN to indicate that the unit is receiving power.

C Signal Lock Status LED

This LED lights up GREEN to indicate that the **HD-SDI** input signal is "locked". The LED lights up AMBER to indicate an unlocked signal. The LED remains unlit if no source is attached to the input.

D Option DIP Switches (1 and 2)

These two 10-position DIP switches modules (**1** and **2**) are used to set the available options for the **HD2SD**. For detailed information about the available options and how to set them, see details starting on page **10**.

HD2SD Settings - DIP Module 1 and 2

The various options are selected by setting the switches on **DIP Module 1** and **DIP Module 2**.

DIP Module 1 is used to set the analog output type (converted from the down-converted SD signal), SD pedestal, graticule type, center cross, embedded audio resolution, video anti-alias filter, and down-converter output format.

DIP Module 2 operates in two selection modes; **Video/Audio Options** mode and **Video Test Pattern** mode. When switch **9** of **DIP Module 2** is in the **UP** position, it is in **Video/Audio Options** mode and is used to set the down-converted aspect format, SD raster output and graticule aspect ratio, EDH, and audio test tones. When switch **9** of **DIP Module 2** is in the **DOWN** position, it is in **Video Test Pattern Mode** is used to select video test patterns for output.

DIP Module 2 also features two refresh modes as set by switch **10**; **Update Mode** and **Update Pause Mode**. In **Update Mode** the DIP switch is continuously monitored for changes to its settings and so the unit will update it's function at the first detected switch change. When making multiple switch settings, the user should place the unit into **Update Pause Mode** by setting DIP Switch **10** into the **DOWN** position. This pauses the updating of the DIP switch settings. When the desired multi-switch setting has been made, the unit should be placed back into **Update Mode** by placing DIP Switch **10** into the **UP** position so that the new setting configuration can be read and enabled by the unit.

See the procedures for the selection modes in the following pages for more information on how to use the refresh modes.

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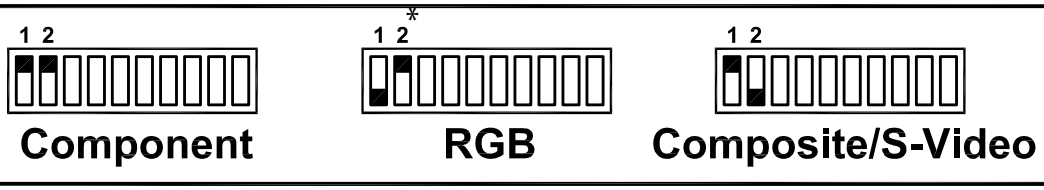
HD2SD - **DIP Module 1 Settings**

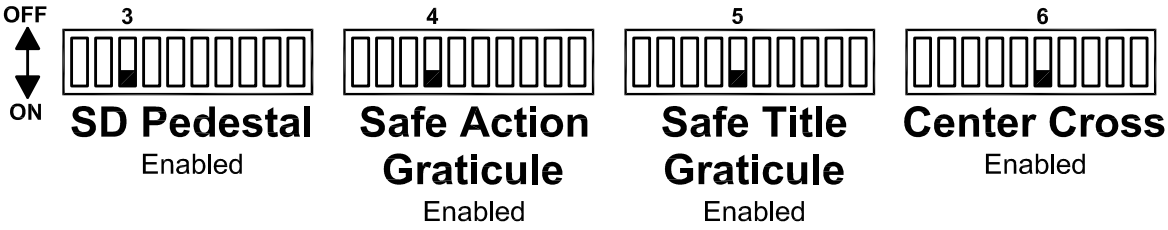
For options set with a single switch, the DIP switch, diagrams will show only the "**enabled**" position (**DOWN**). To disable the option, place the switch in the **UP** position, unless otherwise noted.

HD2SD - DIP 1
Video/Audio Output Options Select

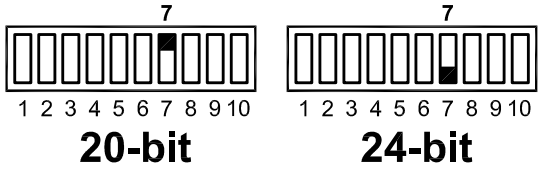
Analog Video Output Select



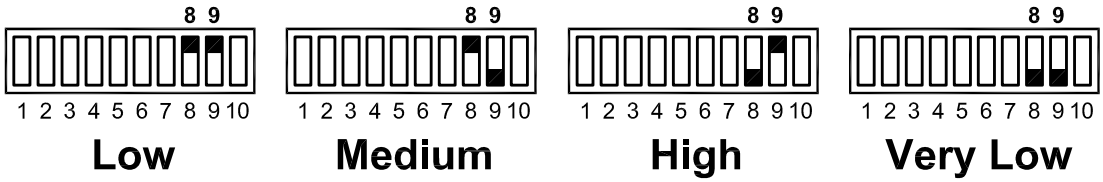
Video Display Options Select



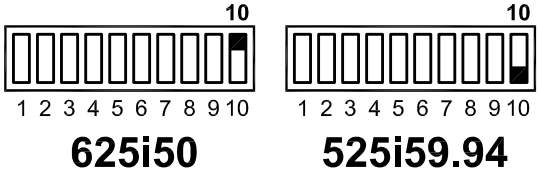
Embedded Audio Resolution Select



Video Anti-Alias Filter Select



Down-Converter Output Format Select



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HD2SD - DIP 2
Video/Audio Output Options Select

Video/Audio Options Selection Procedure

Follow the steps below to prepare **DIP Module 2** for selecting the video/audio options in the chart below.

STEP 1	• Switch **10** to **DOWN** to pause switch updating. • Switch **1- 8** to **UP** to prepare for option selection. • Switch **9** to **UP** to *enable* **Video/Audio Option** selection mode.
STEP 2	• Switch **1-8** to desired settings as shown in the following chart.
STEP 3	• Switch **10** to **UP** to update and enable all switch settings.

NOTE: Switch **9** must be set to the **UP** position to enable all settings shown below.

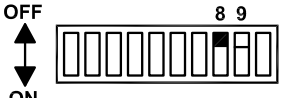
Down-Converted Aspect Format for 4:3 and 14:9

(**16:9** is always **Anamorphic**)

Letterbox

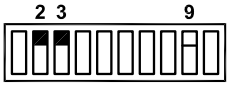
Center Cut

Error Detection and Handling (EDH) Enable

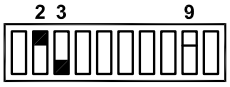


EDH Enabled

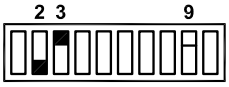
Down-Converted SD Raster Output Aspect Ratio



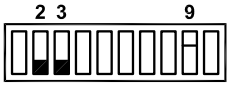
4:3



16:9



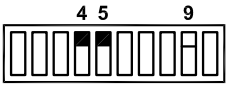
14:9



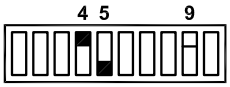
4:3

Graticule Aspect Ratio

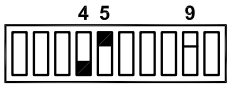
(Locked to 16:9 for HD Inputs)



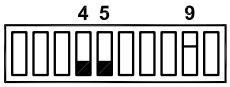
4:3



16:9

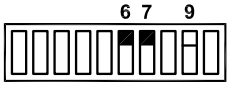


14:9

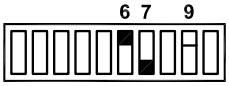


4:3

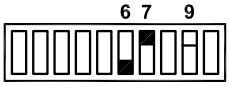
Audio Test Tone Select



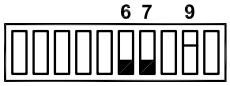
OFF



Pair 1 Only =
1 kHz on Group 1



Pair 1 **= 1 kHz Tone**
Pair 2 **= 500 Hz Tone**
Pair 3 **= 1 kHz Broken Tone**
Pair 4 **= 500 Hz Broken Tone**



Pairs 1,2,3,4:
1 kHz Tone on Left
1 kHz Broken Tone on Left

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HD2SD - DIP 2 Video Test Pattern Select Mode

Video Test Pattern Selection Procedure

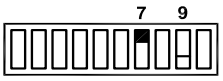
Follow the steps below to prepare **DIP Switch 2** for selecting the video test patterns shown in the chart below.

STEP 1	• Switch **10** to **DOWN** to pause switch updating. • Switch **1-8** to **UP** to prepare for option selection. • Switch **9** to **UP** to *enable* **Video Test Pattern** selection mode.
STEP 2	• Switch **1-8** to desired settings as shown in the following chart.
STEP 3	• Switch **10** to **UP** to update and enable all switch settings.

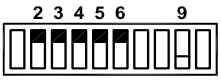
NOTE: Switch **9** must be set to the **DOWN** position to enable all settings shown below.

Video Test Pattern Selection Chart

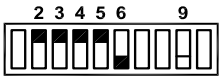
Test Pattern Select Enabled



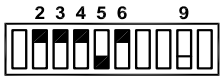
709 to 601 Color Conversion Enabled



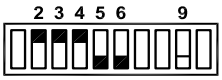
Color Bars 100/0/100/0



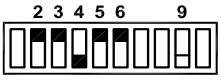
Color Bars 100/0/75/0



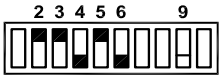
Color Bars 175/0/75/0



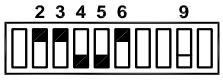
Color Bars 100% and RED



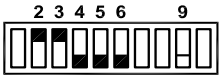
SMPTE Color Bars



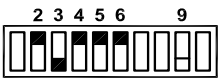
Pathological Equalizer and PLL



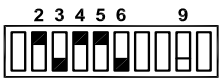
4:3 Square



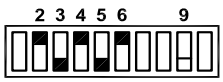
16:9 Square



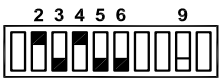
5 Step Staircase



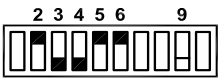
Valid 5 Step Modulated Staircase



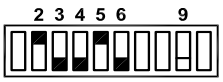
Limit Ramp



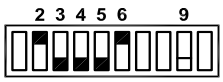
Shallow Ramp



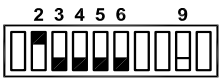
Multiburst 60% Sweep with Markers



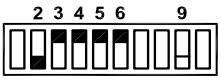
Full Fieldline 17 ITS



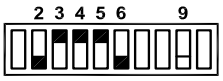
Convergence



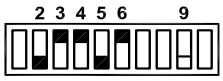
Tartan Bars



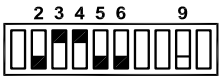
1 Field in 8 White



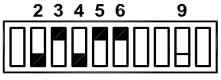
White



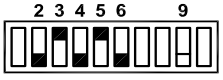
Black



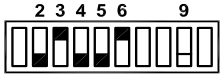
Red



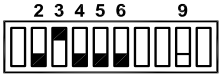
Green



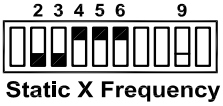
Blue



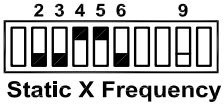
Magenta



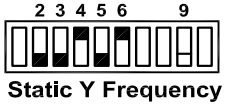
Cyan



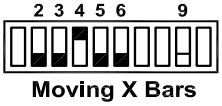
Static X Frequency Sweep Lo Zoneplate



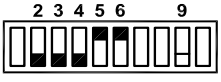
Static X Frequency Sweep Hi Zoneplate



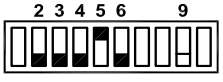
Static Y Frequency Sweep Zoneplate



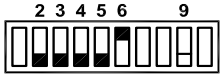
Moving X Bars Zoneplate



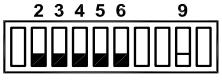
Moving Y Bars Zoneplate



Moving XY Bars Zoneplate



Satic Circular Zoneplate



Moving Circular Zoneplate

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HD12DAC **and** SD12DAC

Digital to Analog Converters and Test Signal Generators

HD12DAC and SD12DAC Description

The **HD12DAC** and **SD12DAC** D/A converters from **PANORAMAdtv** are a compact, convenient, and cost effective solution for converting digital video to analog and de-embedding audio to AES or analog signals in the modern SD and HD broadcast studio environment.

D/A conversion is 12-bit with over sampling of 2x for HD-SDI and 16x for SD-SDI. Both models are able to convert SD-SDI signals to analog video, including Component, RGB, or S-Video/Composite. The **HD12DAC** is also able to convert HD-SDI signals into Component or RGB analog video signals. Video formats are detected automatically and various video output options are selectable by setting the external 10-position DIP switches

Audio can be de-embedded from the SD-SDI or HD-SDI source to either digital AES/EBU or industry standard analog using high quality 24-bit DACs. When de-embedding audio to analog, the user may select any *one* audio stereo *pair* of the eight pairs available from the four audio groups. When de-embedding to digital AES/EBU, the user may select any group of SDI. The converted audio is output from two unbalanced BNC connectors.

Both models provide a range of additional features, including graticule, aspect ratio, and audio test tone generation. The **SD12DAC** model also features the ability to generate a wide variety of useful video test patterns. Two LEDs on the units rear panel indicate power and HD/SD-SDI signal lock status. Both models are relatively small with dimensions of 4" x 3.4" x 1". Power may be provided by an optional external 12V power supply.

Features

- **HD12DAC model:** converts HD-SDI or SD-SDI to analog video and de-embeds to analog audio or AES/EBU audio
- **SD12DAC model:** converts SD-SDI to analog video and de-embeds to analog audio or AES/EBU audio
- Both models convert SD-SDI to component, RGB, or S-Video/composite analog video output on three unbalanced BNC connectors
- **HD12DAC** model converts HD-SDI to component or RGB analog video output on three unbalanced BNC connectors
- De-embeds to analog or AES/EBU audio from the HD or SD source and outputs it from two unbalanced BNC connectors
- Any one of eight stereo pairs of analog audio or AES audio may be selected from any audio group for de-embedding
- 12-bit D/A video conversion
- Generates audio test signals
- **SD12DAC** model can generate a large number of video test patterns
- Oversampling of 2x for HD-SDI and 16x for SD-SDI
- Automatically detects video format (PAL or NTSC)
- Graticule and SD Pedestal select options
- 12V DC power supply available

Applications

The **HD12DAC** and **SD12DAC** are ideally suited for use in VTR bays, mobile production vehicles, teleconferencing installations, multimedia systems, satellite link and cable TV facilities, on-air radio studios, or any modern SD/HD studio environment. Designed and manufactured in the U.S., the they are backed by a strong warranty and a satisfaction guaranteed return policy.

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General Specifications

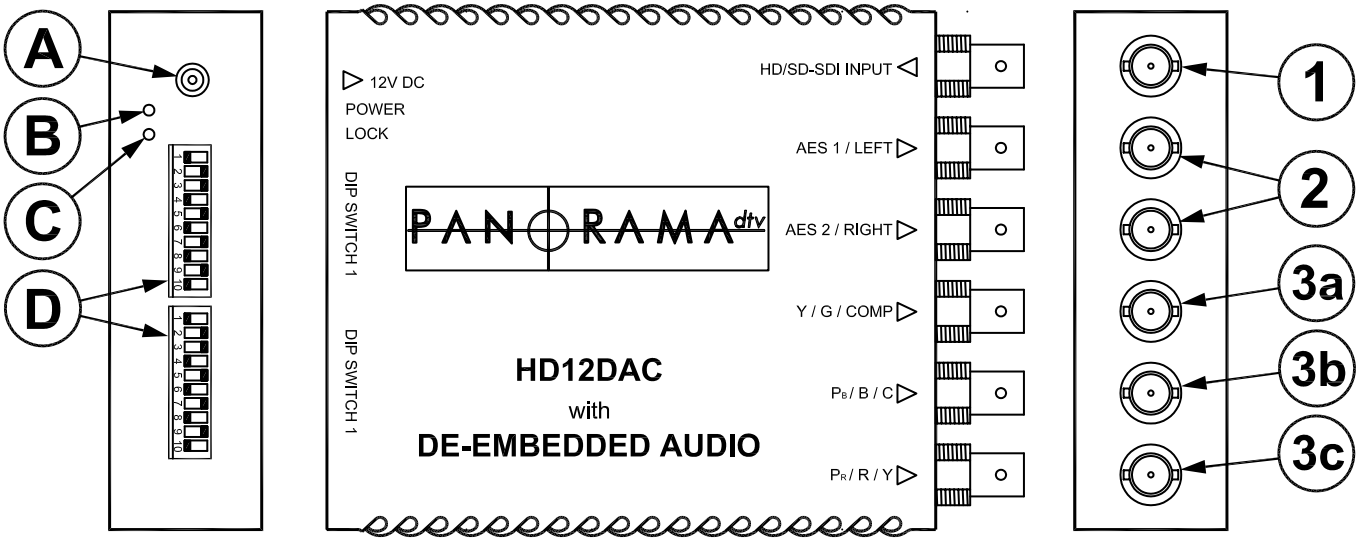
Input Type:	**HD12DAC:** HD-SDI or SD-SDI, 10-bit **SD12DAC:** SD-SDI, 10-bit
Input Connector:	1x 75 ohm female BNC
HD12DAC Video Output Types:	**HDTV / EDTV:** (Y,Pb,Pr) / (R,G,B) **SDTV:** (Y,Pb,Pr) / (R,G,B) / (Composite, S-Video)
SD12DAC Video Output Types:	**EDTV:** (Y,Pb,Pr) / (R,G,B) **SDTV:** (Y,Pb,Pr) / (R,G,B) / (Composite, S-Video)
Video Output Connectors:	3x 75 ohm female BNC
Video DAC:	12-bit
Audio Output Type:	Analog (1x pair) or AES/EBU (2x pair)
Audio Output Connectors:	2x female BNC
Audio DAC:	24-bit
HD Audio Packet Support:	SMPTE 299M
SD/ED Audio Packet Support:	SMPTE 272M
Dimensions:	4" x 3.4" x 1" (101 x 101 x 27mm)

Supported Video Formats

HD:	SMPTE 292M/274M/296M @ 1.485 and 1.435 Gb/s -1080i @ 60/59.94/50 Hz -1080p/psf @ 30/29.97/25/24/23.98 Hz -720p @ 60/59.94/50/30/29.97/25/24/23.98 Hz
ED:	SMPTE ITU-BT1358 and SMPTE 293M @ 540 Mb/s -625p50 -525p59.94
SD:	SMPTE 259M @ 270 Mb/s -625i/50 525i59.94

HD12DAC and SD12DAC Operation

Please refer to the diagram below to familiarize yourself with the front and rear panel features of the **HD12DAC** and **SD12DAC** units. The sections on the following pages describe these features and are referenced, by number for front panel and letter for rear panel, to the diagram below. Note that even though only the **HD12DAC** is shown in the diagram, it is identical in operation and layout to the **SD12DAC**.



HD12DAC and SD12DAC Front Panel Features

1 HD/SD-SDI (HD12DAC) or SD-SDI (HD12DAC and SD12DAC) Input

In the **SD12DAC** model, this unbalanced BNC connector accepts industry standard **SD-SDI** signals. In the **HD12DAC** model, this connector accepts either **SD-SDI** or high-definition **HD-SDI** signals.

2 Audio Outputs **(Left and Right)**

These two unbalanced BNC connectors respectively output the left/right audio as de-embedded from the **SD-SDI** or **HD-SDI** signal entering the unit at the input (**Item 1**). The **Audio Group** and the **Audio Pair** (of the selected **Audio Group**) to be de-embedded may be selected using the two 10-position **Option DIP Switch** on the rear panel (**Item D**). See pages **10** and **12** for more information about setting the option DIP switches.

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HD12DAC and SD12DAC Front Panel Features

3 Analog Output Connectors (PR/R/Y, PB/B/C, and Y/G/COMP)

The converted analog video signals are output from these three connectors. The analog output type is selected by setting **Option DIP Switch 1** (**Item D**). Selecting **component** outputs **PR/PB/Y** signals from the three connectors, selecting **RGB** outputs **Red/Green/Blue** signals, and selecting **Composite/S-Video** outputs **Y/C** signals (**S-Video**) from two connectors (**Items 3a** and **3b**) and a **Composite** signal from the third connector (**Item 3c**). See **3a**, **3b**, and **3c** below.

3a Y/G/COMP Output

- **Component** = outputs **Y** (Luminance) signal
- **RGB** = outputs **GREEN** (**G**) signal
- **Composite** = outputs **Composite** signal (not available from **HD-SDI** source*)

3b PB/B/C Output

- **Component** = outputs **PB** (BLUE color difference) signal
- **RGB** = outputs **BLUE** (**B**) signal
- **S-Video** = outputs **C** (Color) signal (not available from **HD-SDI** source*)

3c PR/R/Y Output

- **Component** = outputs **PR** (RED color difference) signal
- **RGB** = outputs **RED** (**R**) signal
- **S-Video** = outputs **Y** (Luminance) signal (not available from **HD-SDI** source*)

*__NOTE:__ It is *not* possible to convert **HD-SDI** signals to **S-Video** and **Composite** analog signals due to the inherent high frequency of **HD** signals.

HD12DAC and SD12DAC Rear Panel Features

A Power Supply Connector

A 12V DC power supply is connected here to provide power to the unit.

B Power Indication LED

This LED lights up GREEN to indicate that the unit is receiving power.

C Signal Lock Status LED

This LED lights up GREEN to indicate that the SD-SDI or HD-SDI input signal is "locked". The LED lights up AMBER to indicate an unlocked signal. The LED remains unlit if no source is attached to the input.

D Option DIP Switches (1 and 2)

These two 10-position DIP switches (1 and 2) are used to set the available options for the **HD12DAC** and the **SD12DAC**. It is here where options such as **Analog Output Type**, **Audio Group**, **Audio Pair**, and others are selected. Note that the **SD12DAC** model has additional functionality which is selected with these switches, including video test pattern generation. For detailed information about the available options and how to set them, see details starting on page **10**.

HD12DAC and SD12DAC Settings - DIP Module 1 and 2

The various options are selected by setting the switches on **DIP Module 1** and **DIP Module 2**.

DIP Module 1 is used to set the analog output type (converted from the HD or SD input signal), SD pedestal, graticule type, center cross, embedded audio resolution, audio AES/analog select, and audio group/pair select.

DIP Module 2 is used to set the down-converted aspect format, SD raster output and graticule aspect ratio, EDH, and audio test tones for the **HD12DAC** and **SD12DAC**. **DIP Module 2** also selects the video test patterns for the **SD12DAC**.

DIP Module 2 features two refresh modes as set by switch **10**; **Update Mode** and **Update Pause Mode**. In **Update Mode** the DIP switch is continuously monitored for changes to its settings and so the unit will update it's function at the first detected switch change. When making multiple switch settings, the user should place the unit into **Update Pause Mode** by setting DIP Switch **10** into the **DOWN** position. This pauses the updating of the DIP switch settings. When the desired multi-switch setting has been made, the unit should be placed back into **Update Mode** by placing DIP Switch **10** into the **UP** position so that the new setting configuration can be read and enabled by the unit.

See the procedures for the selection modes in the following pages for more information on how to use the refresh modes.

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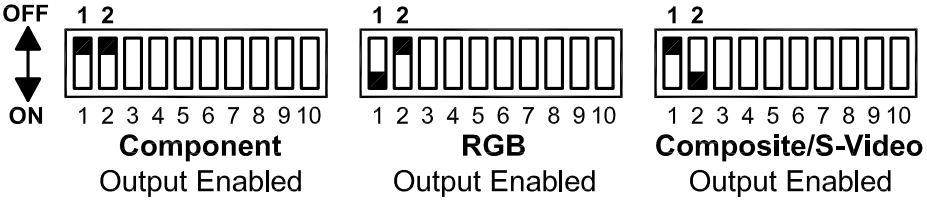
HD12DAC - **DIP Module 1 Settings**

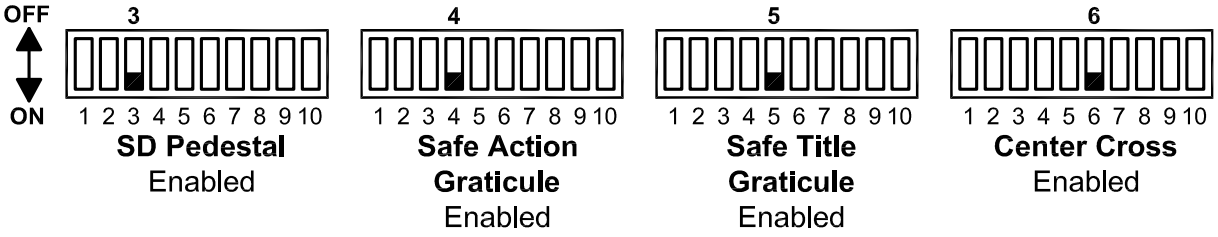
For options set with a single switch, the DIP switch diagrams will show only the "**enabled**" position (**DOWN**). To disable the option, place the switch in the **UP** position, unless otherwise noted.

HD12DAC - DIP 1
Video/Audio Output Options Select

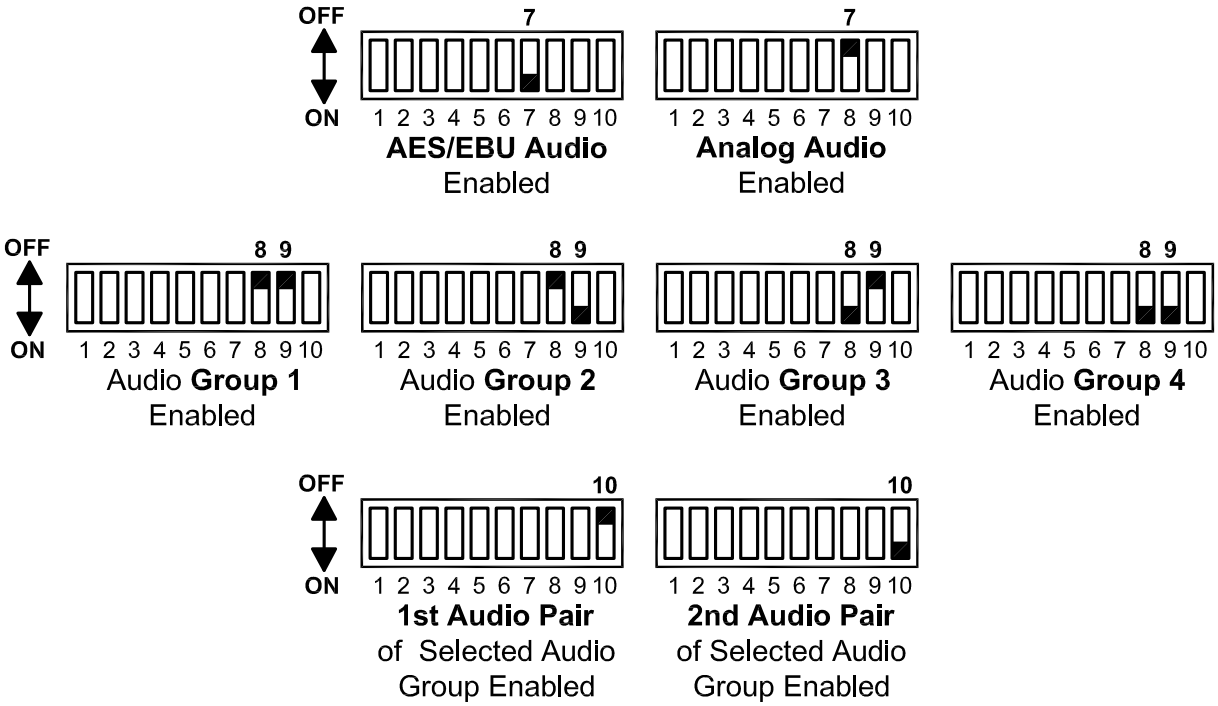
Video Output Select



Video Display Options Select



Audio Output Select



*__Note:__ HD-SDI signals cannot be down-converted to S-Video or Composite video due to the high frequency of HD signals.

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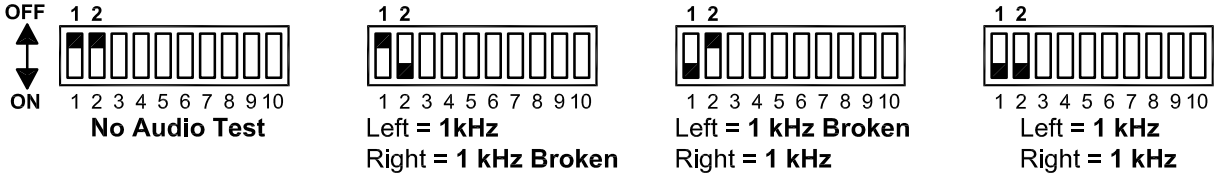
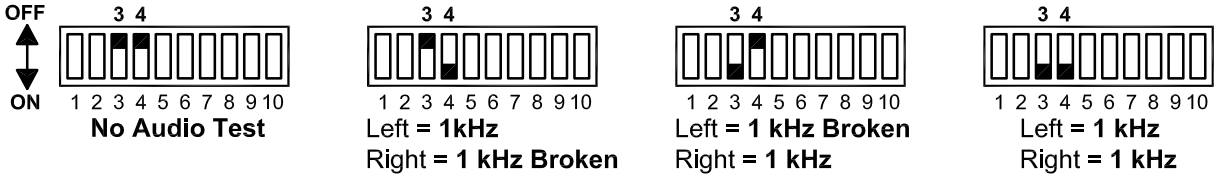
HD12DAC - DIP 2
Audio Test and Graticule Select

AES 1 / Analog Audio Test Select



AES 2 Audio Test Select



Graticule Selection

Setting #	INPUT Graticule Aspect	OUTPUT Raster Format	Switch Settings	Setting #	INPUT Graticule Aspect	OUTPUT Raster Format	Switch Settings
1	4:3	4:3		9	14:9	4:3	
2	4:3	16:9		10	14:9	16:9	
3	4:3	14:9		11	14:9	14:9	
4	4:3	4:3		12	14:9	4:3	
5	16:9	4:3		13	4:3	4:3	
6	16:9	16:9		14	4:3	16:9	
7	16:9	14:9		15	4:3	14:9	
8	16:9	4:3		16	4:3	4:3	

Graticule Select Notes:

1) For HD-SDI signals, the raster output will only ever be **16:9**.

2) There are eleven possible graticule settings. Note that some graticule selection settings are duplicated in the **Graticule Selection Chart** as follows:
Setting **1** (**4:3 x 4:3**) same as settings **4**, **13**, and **16**.
Setting **5** (**1:9 x 4:3**) same as setting **8**.
Setting **9** (**14:9** x **4:3**) same as setting **12**.

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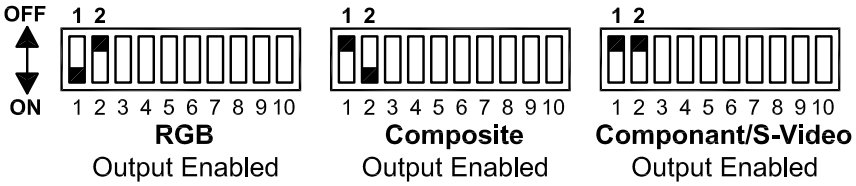
SD12DAC - **DIP Module 1 Settings**

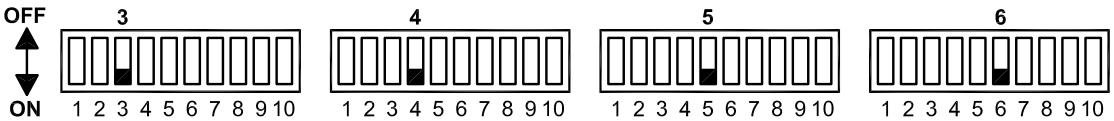
For options set with a single switch, the DIP switch diagrams will show only the "**enabled**" position (**DOWN**). To disable the option, place the switch in the **UP** position, unless otherwise noted.

SD12DAC - DIP 1
Video/Audio Output Options Select

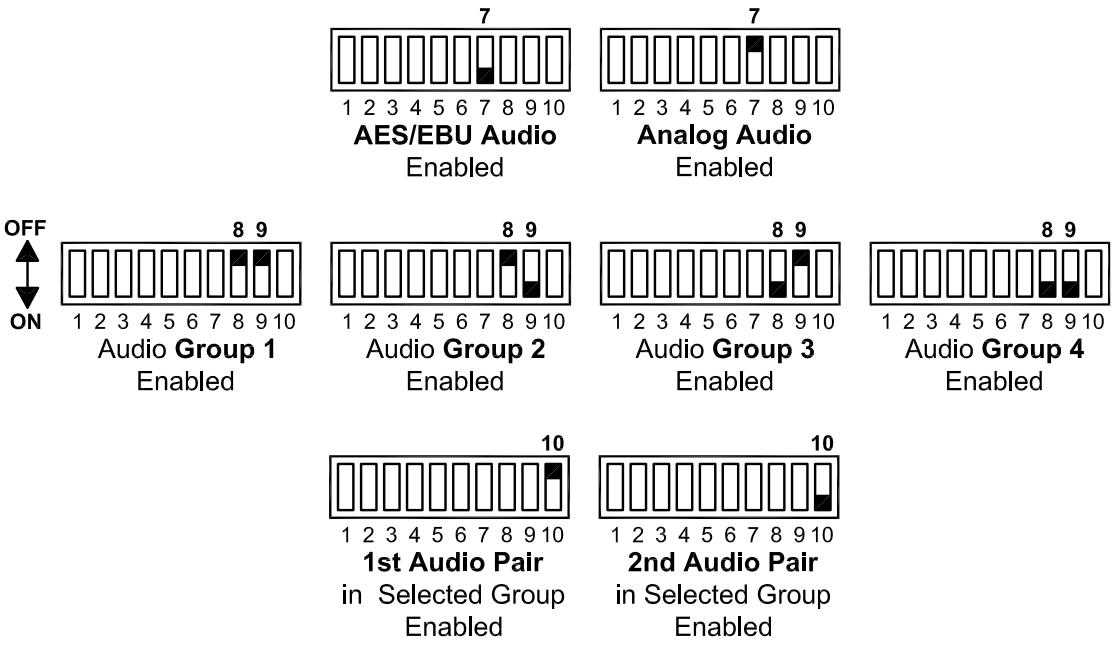
Analog Video Output Select



Video Display Options Select



Audio Output Options Select



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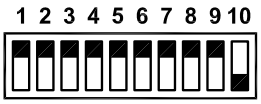
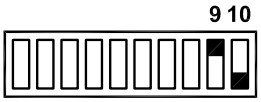
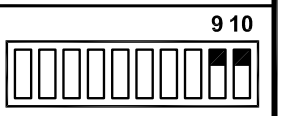
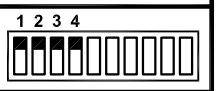
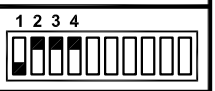
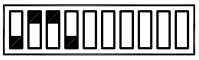
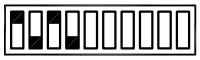
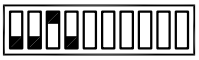
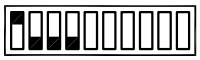
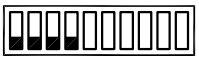
SD12DAC - DIP 2
Graticule Select Mode

Graticule Selection Procedure

Follow the steps below to prepare **DIP Switch 2** for selecting the **Graticule** shown in the chart below.

STEP 1	• Switch **10** to **DOWN** (pauses switch updating) • Switch **1-8** to **UP** (prepares for option select) • Switch **9** to **UP** (sets **Graticule Selection** option) 
STEP 2	• Switch **1-4** to desired setting (see **Graticule Selection Chart**) **NOTE:** When in **Graticule Select** mode (switch **9** to **UP**), switches **5-8** are used to set the **Audio Test Tone** (see below for settings). 
STEP 3	• Switch **10** to **UP** (updates switch settings) 

Graticule Selection Chart

Setting #	INPUT Graticule Aspect	OUTPUT Raster Format	Switch Settings	Setting #	INPUT Graticule Aspect	OUTPUT Raster Format	Switch Settings
1	4:3	4:3		9	14:9	4:3	
2	4:3	16:9		10	14:9	16:9	
3	4:3	14:9		11	14:9	14:9	
4	4:3	4:3		12	14:9	4:3	
5	16:9	4:3		13	4:3	4:3	
6	16:9	16:9		14	4:3	16:9	
7	16:9	14:9		15	4:3	14:9	
8	16:9	4:3		16	4:3	4:3	

Graticule Select Notes:

1) There are eleven possible graticule settings. Note that some graticule selection settings are duplicated in the **Graticule Selection Chart** as follows:

Setting **1** (**4:3 x 4:3**) same as settings **4**, **13**, and **16**.
Setting **5** (**1:9 x 4:3**) same as setting **8**.
Setting **9** (**14:9** x **4:3**) same as setting **12**.

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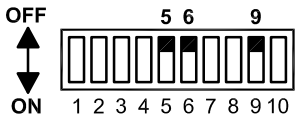
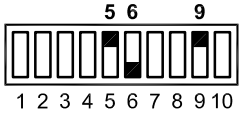
SD12DAC - DIP 2
Audio Test Tone Select

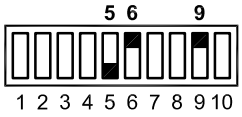
AES 1 / Analog Audio Test Tone Select



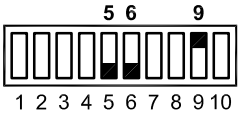
No Audio Test



Left **= 1kHz**
Right **= 1 kHz Broken**

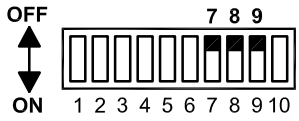


Left **= 1 kHz Broken**
Right **= 1 kHz**

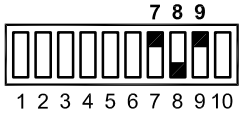


Left **= 1 kHz**
Right **= 1 kHz**

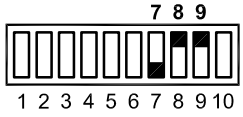
AES 2 Audio Test Tone Select



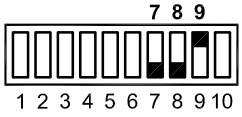
No Audio Test



Left **= 1kHz**
Right **= 1 kHz Broken**



Left **= 1 kHz Broken**
Right **= 1 kHz**



Left **= 1 kHz**
Right **= 1 kHz**

Audio Test Tone Select Notes:

1) Audio Test Tone Select only functions when unit is in **Graticule Select** mode, thus switch **9** should be put in the **UP** position to enable the audio test tones.

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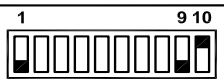
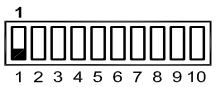
SD12DAC - DIP 2 Video Test Pattern Select Mode

Video Test Patterns Selection Procedure

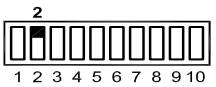
Follow the steps below to prepare **DIP Switch 2** for selecting the **Video Test Patterns** shown in the chart below.

STEP 1	• Switch **10** to **DOWN** (pauses switch updating) • Switch **1-8** to **UP** (prepares for option select) • Switch **9** to **DOWN** (sets **Video Test Pattern Selection** option)	
STEP 3	• Switch **1-8** to desired setting (see **Video Test Pattern Chart** below)	
STEP 4	• Switch **1** to **DOWN** (enables selected **Video** • **Test Pattern**) Switch **10** to **UP** (updates switch settings)	

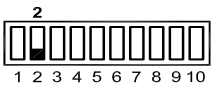
Video Test Pattern Chart



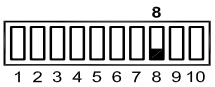
Video Test Pattern Enabled



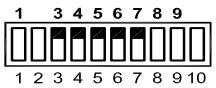
PAL Video Test Pattern Format Enabled (if no input)



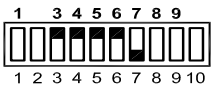
NTSC Video Test Pattern Format Enabled (if no input)



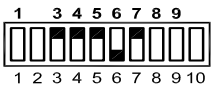
Vertical Blanking Interval (VBI) Enabled



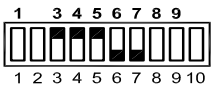
Color Bars 100/0/100/0



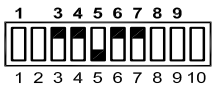
Color Bars 100/0/75/0



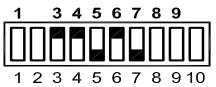
Color Bars 175/0/75/0



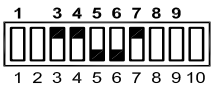
Color Bars 100% and RED



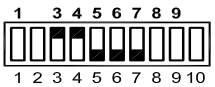
SMPTE Color Bars



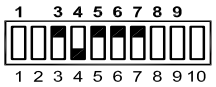
Pathological Equalizer and PLL



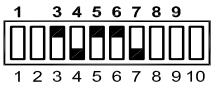
4:3 Square



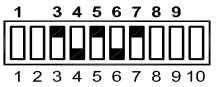
16:9 Square



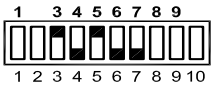
5 Step Staircase



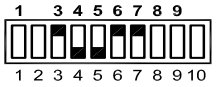
Valid 5 Step Modulated Staircase



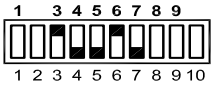
Limit Ramp



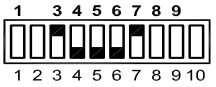
Shallow Ramp



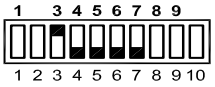
Multiburst 60% Sweep with Markers



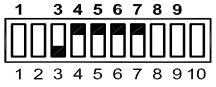
Full Fieldline 17 ITS



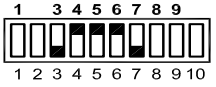
Convergence



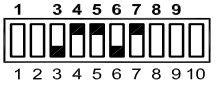
Tartan Bars



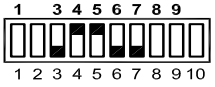
1 Fleld In 8 Whlte



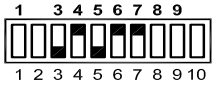
Whlte



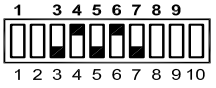
Black



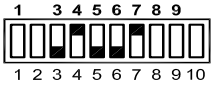
Red



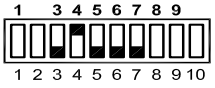
Green



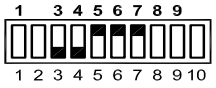
Blue



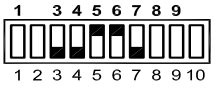
Magenta



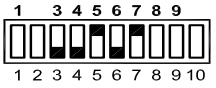
Cyan



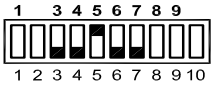
Static X Frequency Sweep Lo Zoneplate



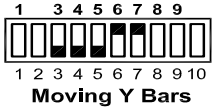
Static X Frequency Sweep Hi Zoneplate



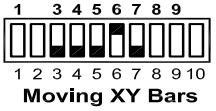
Static Y Frequency Sweep Zoneplate



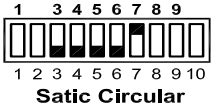
Moving X Bars Zoneplate



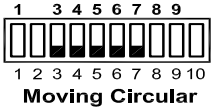
Moving Y Bars Zoneplate



Moving XY Bars Zoneplate



Satic Circular Zoneplate



Moving Circular Zoneplate

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